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History Sheet

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1 Introduction

The Project Execution Plan (PEP) is a contract deliverable that describes Bechtel National, Inc.'s (BNI) overall approach to managing the project. This plan is divided into two interrelated parts. The first part is the Project Control System description. This system is described in section 2 of this document. A separate document, the Project Control Plan (PL-24590-PCA0001), provides a more detailed description of project control strategies. The second part of the PEP is the Project Baseline Description. The Project Baseline Description is included in the Project Baseline, issued as a separate document (CE-24590-PCA00001).

The approach that BNI employs to manage projects is through people (experience, organization, roles, and responsibilities) and processes (planning, execution, monitoring, and controlling). The project is managed by a qualified staff organized and assigned responsibilities and authorities as defined in Appendix A of this document and Policy Q-01.1 of the Quality Assurance Manual. The project's key personnel are listed in Section J, Attachment F of Contract DE-AC27-01RV4136. Additional information on the organizational breakdown structure is provided in section 2.2 of this document.

The BNI processes for project management begin with planning tools to define the baseline, approach, and strategies. Once the plan is approved, control, monitoring, and reporting are performed using the processes described in section 2.4 of this document.

2 Project Control System Description

2.1 Work Breakdown Structure

The work breakdown structure (WBS) defines the entire contractual scope of work, including engineering, procurement, construction, startup, and commissioning requirements of the project. The WBS establishes a framework within which planning, estimating, budgeting, performance measurement, and actual costs are collected and reported. For further information on the specific Waste Treatment Plant (WTP) WBS process, refer to the Project Control Plan.

WBS Dictionary Sheets for the WTP Project can be found in Appendix 2 of the Project Baseline.

2.2 Organizational Breakdown Structure

The project organizational breakdown structure (OBS) is set up as shown in Figure 1.

In some cases, further breakdowns exist below Level 3 within the functional departments.

The project's organizational structure, functions, responsibilities, and authorities are presented in Appendix A. Policy Q-01.1 of the Quality Assurance Manual defines the quality affecting roles and responsibilities. Key management personnel are listed in Attachment F, Section J of the contract.

2.3 Interfaces & Interface Management

External interfaces are managed in accordance with the interface management procedure (Contract deliverable 1.4, Table C.5-1.1) and documented in the interface control documents (ICDs). ICDs detail the information needed to safely and efficiently coordinate our activities with Hanford Site operations. This process assures documentation and management of shared responsibilities for: (1) transfer of energy, data, or materials; and (2) development, operation, and maintenance of physically compatible facilities and subsystems. The primary interface management lies with the interface management team (IMT), comprised of leadership members from CHG, BNI, and DOE. The BNI representatives on the IMT are the BNI interface manager and the systems engineering manager. The interface manager has overall programmatic responsibility for external interfaces, while the systems engineering manager has the responsibility for the technical aspects of the interfaces. ICDs are updated every six months throughout the period of the contract performance.

Internal interfaces are managed within the engineering configuration management system. A number of other external interfaces (such as permitting) are managed within the respective processes and are not part of the formal interface management system.

2.4 Approaches

2.4.1 Systems Engineering

Systems engineering for WTP is concerned with facilitating quality improvement of the facility design, especially in the areas of constructability, operability, reliability, availability, maintainability, inspectability, testability, radiation exposure, and unplanned product interruptions. The most significant objective of the system engineering process is to ensure that the resulting design meets the requirements and needs of the customer throughout the entire lifecycle of the facility, including decommissioning. The system engineering process is multi-disciplinary in nature and includes interface management (ICDs), configuration management, documentation of the design process (what is done and why), and also provides a place where engineering lessons learned can be recorded and integrated into the work processes. One major goal of the overall systems engineering process is to minimize changes to the detailed design once it has been completed. This goal is accomplished by ensuring that all relevant concerns have been included in the overall design process, at the appropriate time.

The WTP systems engineering effort will be centrally managed through the systems engineering group within the engineering department. Execution will be cross-functional, and will be implemented throughout all relevant areas of the project. The systems engineering group will facilitate and monitor the implementation of systems engineering tenants and principles. This will be implemented through the administration of the configuration management and interface control, activities under the direction of a systems engineering manager.

2.4.2 Configuration Management

Within the configuration management (CM) system is an integrated management process that identifies and documents the physical and functional characteristics of a facility's structures, systems, components, and computer software. It also ensures that changes to these characteristics are developed, assessed, approved, issued, implemented, verified, recorded, and incorporated into the facility's documentation.

The CM plan requires that the project configuration is baselined at a number of distinct points during the progress of the project. These baselines will consist of the technical and requirements documentation that

describe the known project configuration and the existing requirements at that time. Changes to the technical baseline will be undertaken via WTP change control procedures.

2.4.3 Technical & Process Change Control

Changes in the technology or process will be controlled by the technology roadmap and the Research and Technology (R&T) Plan (PL-W375-TE00007) in concert with existing configuration management procedures for the control of design. The roadmapping process was adopted from that endorsed by the DOE Office of Building, Technology, State and Community Programs (BTS). Roadmapping will create a shared vision among diverse groups within and between organizations, and will provide a framework for cooperative technology development efforts that help to accelerate the development of new technologies and approaches. Roadmapping will also serve to align resources with the high-priority needs identified. The planning for research and technology activities will be linked to the project via the technology roadmapping process.

The bases and assumptions for the process will be documented annually or as technology decisions, driven by the roadmapping process, make it necessary. These bases and assumptions will be incorporated into the process models, process flow diagrams, and material balances for verification. Any changes to the technology or bases will be communicated to engineering, or to R&T for resolution of open technical issues. Changes to the process or technology will be controlled in this manner. The process technology department will issue these process bases and assumptions. The design will be controlled by processes described in section 2.6 of this document.

2.4.4 Baseline Change Control

The WTP performance measurement baseline consists of technical scope, schedule, and related cost estimates as established in the Project Baseline. This baseline is the starting point for any subsequent baseline change management and can be modified only through a formal, documented change control process. For additional information on the specific WTP processes for change control refer to the Project Control Plan.

2.4.5 Contract Administration

The scope of this section addresses administration of the contract. The administration of subcontracts awarded by BNI and other contracts awarded by DOE and administered by BNI are not included.

Prime contract administration will be in accordance with the principles set forth in BNI's prime contracts management manual.

The prime contract manager and staff will advise the project manager in the administration of contract commercial matters as required. Management of the prime contract will be a team effort led by the project manager. Each member of the project team will have responsibility to perform within the scope of the prime contract.

A summary of the prime contract will be prepared by the contracts department for review by each member of the project team who has contract management responsibilities, to identify all parties obligations. A baseline frame of reference that consists of a comprehensive summary of contractual obligations will be established by the prime contract manager.

The following documents may be prepared in order to develop and implement an effective contract management and compliance program:

- Contract Management Responsibilities Matrix: Record the project manager's assignment of various management tasks to specific project team members.
- Contracts Requirement Action List: Identify the specific contract actions and obligations of BNI and DOE; assigning responsibility for each action to specific project team members.
- Contract Notice Requirements Action List: Identify the contractually required notices, and specify which individuals will be responsible for initiating them.
- Pending Items Procedure: Track and follow to resolution any DOE directed or caused changes in the work, conditions, or schedule, including the resulting cost and schedule impacts.
- Project Change Order Procedure: Ensure that BNI's entitlement to additional time and compensation is carefully and properly documented and communicated to DOE.

Based on BNI's prime contract management manual, the prime contract will be administered by identifying contractual requirements and obligations, by developing processes to comply with those contractual requirements and obligations, and by ensuring contractual compliance throughout the life of the project. Contract administration will pertain to the following:

- Scope changes
- Correspondence requirements
- Progress and fee payment procedures
- Customer-supplied design, requirements, materials, equipment
- Drawing and document submittal requirements
- Various schedule requirements
- Material and equipment submittal requirements
- Insurance and bond requirements
- Special report requirements

2.4.6 Performance Measurement

The project will implement a traditional performance measurement process. This process will provide the tools for management to evaluate performance, to identify critical tasks or issues, to develop corrective action plans, and to monitor the current statue of milestones and deliverables. This performance evaluation will also be the basis for monthly performance reporting to DOE. For a more detailed discussion of specific WTP systems and processes used to measure and report project performance, refer to the Project Control Plan.

2.4.7 Information & Reporting

Periodic performance reports are an integral part of communicating progress on the WTP Project as well as providing analysis information and identifying corrective actions. The Project Controls System will contain several integrated systems to control and report technical (scope), cost and schedule data for use in preparing informational and analytical reports for project management as well as DOE. For a more detailed discussion of the WTP reporting requirements and related processes, refer to the Project Control Plan.

2.4.8 Work Authorization and Management

Work authorization and management impacts all areas and functions within the WTP project. Below is a description of the major work authorization processes. For additional information regarding baseline development, baseline approval, trend and change control processes, refer to the Project Control Plan.

2.4.8.1 Engineering

Engineering participates as part of the project team in the initial development of the project budget and schedule, and uses that information as the basis for its staffing plan. Once DOE concurrence is obtained, the project manager formally approves the project schedule. Engineering then has the authority to perform the identified work activities and necessary support functions and staffing activities.

Each basic work process may have its own approval process (steps involved in producing design documents, procurement documents, and so forth), and work is conducted in accordance with those procedures as authorized by the engineering manager. Such procedures implement quality program commitments or other requirements; define the manner in which BNI engineering wants work activities conducted, reviewed, approved. Engineering relies on the discretion of the discipline managers to manage their assigned resources to meet project scheduled activities in compliance with the associated budgets, to identify cost/schedule trends when recognized, and to submit design change applications when necessary.

2.4.8.2 Construction

Construction participates as part of the project team in the initial development of the project budget and schedule, and uses the information as the basis for its staffing plan. Once DOE concurrence is obtained, the project manager formally approves the project schedule, thus authorizing all identified work activities and necessary support functions and staffing activities. Each basic work process may have its own approval process (steps involved in producing work package documents, and so forth), and work is conducted in accordance with those procedures as authorized by the construction manager.

Responsibility for all WTP construction will be vested in the construction manager. Construction work will be performed in accordance with BNI methods and practices developed on similar large, closely regulated nuclear facilities. Project construction procedures, practices, and guides will be based on existing BNI documents to perform "safe work, in conformance with requirements, on time, and within budget". All work will be based on identified workscope and packaged with all requirements to perform the work in accordance with the contract, design, and regulatory requirements. Construction work with clearly identified workscope and moderate technical complexity will be completed through an appropriate mix of fixed firm price (FFP), performance based incentive (PBI), and small business (SB), including small disadvantaged business (SDB), construction subcontracts. Where workscopes are potentially subject to changes, or the technical complexity challenges the available subcontracting resources, the work will be performed by BNI force account (direct hire) craft resources under direct BNI supervision. All subcontracted and force account construction supervision and crafts will receive general site orientation and task-specific training prior to performing any work. Orientation and training records for all supervision and crafts will be maintained throughout the duration of construction work and will be retained as project documentation. Construction site management is discussed further below.

2.4.8.3 Operations

Commissioning and training participates as part of the project team in the initial development of the project budget and schedule, and uses the information as the basis for its staffing plan. Once DOE concurrence is obtained, the project manager formally approves the project schedule, thus authorizing all identified work activities and necessary support functions and staffing activities. Each basic work process might have its own approval process (steps involved in producing operations plans, documents, and so forth), and work is conducted in accordance with those procedures as authorized by the commissioning and training manager.

All authorized work is clearly visible in the budget for commissioning and training, relates directly to a scoping statement, and is charged to the respective charge number and code of accounts number. Work that can't be related to a scoping statement should be raised as a trend. Subsequent to approval of the trend, a baseline change proposal (BCP) can be developed, and the work would be added to both the schedule and the budget. Only then could this work proceed.

2.4.9 Contingency

Contingency dollars are reserves held by BNI to accommodate increases in costs that fall within the general scope for the contract and are historically known to be realized. Typical examples would include:

- Increase in design quantities for field installation to perform the same purpose and function as the original design.
- Deviation of craft production rates as compared to baseline rates.
- Costs of delays due to inclement weather within the norm for the area.
- Errors and omissions in the baseline estimate.

Contingency will be utilized to provide a buffer from the risks generally within the control of BNI. It is included in the performance measurement baseline and managed by BNI. Technology risks are not included in contingency and should be considered separately by the DOE. WTP's approach to risk management is described below

2.4.10 Risk Management

The WTP project approach to risk management is rooted in a commitment to deliver a specified product at the specified time, while meeting safety, quality and cost commitments. The approach systematically addresses the technical aspects of the project that can affect the team's ability to meet its commitment.

The Technical Risk Management Plan (PL-W375-PR00001) for the project consists of the following major steps that are generally performed in sequence:

Identification
Quantification
Handling
Impact determination
Reporting
Managing
Tracking

Results from the risk management process are used to determine, by analysis, a technical uncertainty cost for the project. This cost will be identified to DOE, but will not be added to the WTP performance measurement baseline.

Also, the final output of the risk process describes risk handling strategies taken to mitigate or reduce risks to the project. This information and data are reported in the WTP Risk Assessment (RPT-W375-PR00017). The risk handling strategies are placed in the project baseline schedule and progress is reported during the quarterly update of the risk assessment report. At major milestones of the project, the risks will be reanalyzed to evaluate the results of research and technology, design, and project management actions on the risk levels. The reanalysis effort provides the opportunity to identify, plan, and execute risk handling strategies that are most appropriate for the current phase of the project life cycle.

2.4.11 Construction Site Management

Construction management will focus on safe, high-quality, cost-effective, and timely construction execution. Construction will be performed utilizing a mix of subcontractor and direct hire resources methodologies. Construction is dedicated to a zero-accident philosophy; unsafe work practices will not be tolerated. BNI work processes and proven procedures will be utilized in the construction of the project. The on-site team will be located at the 200E project site. The on-site team will be staffed with craft supervisors, labor relations specialists, quality control engineers, field engineers, project controls engineers, environmental/safety/industrial hygiene engineers, and other support personnel organized under the construction manager, who will manage the construction efforts of the building trades craftsmen. Job work rules will be developed to control conduct of activities on the site. All construction work will be performed in accordance with the Hanford Site Stabilization Agreement and its addenda developed specifically for the WTP project. Under the provisions of these labor agreements, joint labor management committees will be formed to steer craft training, to determine craft availability, and to implement a site craft incentive program. This incentive program will assist all construction personnel to meet project objectives in safety, quality, schedule, and cost.

2.4.12 Communications & Stakeholder Involvement

The WTP project team recognizes the vital need and inherent value of maintaining positive communications with the community, the public, and stakeholders. The team fully supports DOE's Office of River Protection in these efforts and is committed to providing timely, accurate, and complete information to all interested audiences. Communication activities will include face-to-face meetings with community leaders and stakeholders, presentations to community groups, frequent appearances before the Hanford Advisory Board and other stakeholder groups, proactive communications with the news media, and the maintenance of an up-to-date Internet site as well as other web-based communications.

2.4.13 Research & Technology

Research and Technology (R&T) participates in the development of the project schedule to provide the durations and key linkages to various organizations within the project. Through the roadmapping process, R&T develops strategies for closure of identified risk issues by developing test specifications from an overall project R&T program plan. The test specifications detail the required testing and standards for closure that will be used by one of several contractors performing R&T tasks in support of the project. These R&T activities are managed as part of the overall project schedule.

2.5 Baseline Development

The WTP project performance measurement baseline consists of integrated technical, cost, and schedule baselines. The technical requirements and objectives for the project are used to develop the technical baseline (workscope). These requirements also form the foundation for the development of schedule and cost baselines.

The cost baseline represents estimated units and dollars for each resource required to accomplish the technical workscope. The cost estimate is supported by documentation that identifies the assumptions, rationale, and basis for the estimate. It is summarized at the same level as actual costs will be collected and reported.

The schedule baseline provides a complete set of time-phased, logically driven activities that incorporate the workscope as defined in the technical baseline and related WBS. The schedule is integrated with the cost baseline to provide the basis for project performance measurement.

Further details on the baseline development are provided in the Project Baseline. The Project Baseline also provides the hierarchy of documents that are used to describe and maintain the baseline.

2.6 Design & Engineering Process

The design process is developed in a disciplined way to ensure that WTP delivers the specified products and can be operated in a manner that will protect the public health and safety, the environment, and the workers.

BNI's corporate engineering systems and processes are key components of the overall technical approach to transform operability requirements into a design, and a design into a facility. These systems combine fundamental principals derived from decades of design/build successes with state-of-the-art automation tools and methods. These proven systems are tailored for WTP by drawing from prior work on the design and other BNI experience in designing, building, commissioning, and operating HLW vitrification plants.

BNI's functional approach to engineering execution meets design objectives using engineering systems and processes that are driven first by function, then by facility. This approach is fully integrated across all design functions and WTP areas – a philosophy that aligns with our organizational chart and procedures. With these systems and processes, BNI:

- provides DOE with the systems and real-time access to information for evaluating progress
- saves time, effort, and cost using effective automation tools and best-practice innovation
- achieves rapid and seamless integration of automation technology by combining BNI systems with the matching previous databases
- provides efficient, reliable, and real-time collaboration among design disciplines and with DOE
- track changes to design requirements, flowing down current information for compliant designs
- cooperates with DOE and other Hanford site contractors to help manage interface issues
- provides consistency throughout the design process by identifying and tracking the status of technical documents and their interrelationships
- identifies and manage risks using proven systematic risk management process

- conducts formal reviews to examine safety, environmental, ALARA, maintenance, quality, design, construction, and operational elements

The project technical authority is the engineering manager. His engineering team produces the design (some selective outsourcing of design may occur). The design effort is managed by engineering discipline groups whose members are generally located together. Personnel from other departments may co-locate with the engineering groups. The area project engineers will provide a facility focus for the planning and scheduling.

The design is performed based on adapted BNI procedures. The design is to be compliant with all established requirements and criteria. The responsibility for adherence to design criteria always resides with the originating group. The design is performed using BNI automation tools and state-of-the-art techniques (such as 3D computer-aided design and smart piping and instrumentation diagrams).

The design process includes: 1) identification and management of design requirements and criteria; 2) conceptual, preliminary, and detailed design development, permitting support; and 3) procurement, construction, and startup support activities. These processes are not executed in distinct phases, but represent the continuation of design throughout the project life cycle

Design requirements come from a number of sources and are reflected in issued design documents. For the designers' convenience, design criteria extracted from a number of key criteria documents (contract, basis of design, functional specification, authorization basis documents, and certain environmental requirements from the Washington Administrative Code) have been compiled into a singular electronic database available for word search and some keyword search. This Design Criteria Database (accessible through Project Document Control), along with the ICDs and the Standards Identification Process Database (SIPD), contain the principal set of requirements governing the design. During design execution, relevant design requirements are identified from these criteria documents and listed against key design documents.

Codes and standards are selected using the Integrated Safety Management (ISM) process for those structures, systems, and components (SSCs) performing a safety function. Otherwise they are selected based on requirements in the Basis of Design (BOD, DB-W375-EG00001).

Conceptual design has been completed for WTP. Preliminary design is in process. Successive letter revision issues of documents have been made reflecting added detail and the results of feedback from numerous reviews, leading to a cost-effective and compliant design. This phase will culminate in upper-level documents, such as general arrangements and P&IDs, ready to issue for procurement or construction, as applicable.

In the detailed design phase, documents will be finalized, with supporting calculations and analyses completed. Design development will continue at the component and sub-component levels, procurement of equipment and bulk materials will begin based on engineering's specifications and material requisitions, and final inputs will be provided as practicable to ES&H for the various permits and authorization requests. At the completion of this design phase the design documents necessary to build the facilities, procure equipment and materials, and make permit submittals will be issued.

To deliver the WTP within baseline, BNI employs a proven tool called the Total Installed Cost (TIC) program. The use of a TIC focus changes project execution from a "department-based" to a "process based" structure, supported by functional departments. Cross-functional Area Teams (Pretreatment, HLW, LAW, and Balance of Facilities) are established on the project with the objective to optimize cost

and schedule performance in the scope of their responsibility – considering both their individual scope and collective project objectives. BNI's TIC program fosters awareness of cost impacts of daily decision making on a project and instills a design-to-cost and firm-fixed price mentality in the engineering organization. Through this awareness, cost effectiveness is incorporated into decisions and yields lowest cost outcomes without compromising safety, quality, or schedule.

During the life of the project, engineering will continue to support various ES&H activities with regulators, and also with procurement, construction, and startup and commissioning on a number of ongoing activities (such as review of vendor submittals and resolution of technical issues for procurement, processing field change requests and providing miscellaneous technical support for construction, and assistance in developing test acceptance criteria for startup).

2.7 Supporting Procedures & Plans

The WTP project will be initiated utilizing existing procedures. These procedures are driven by higher level documents, as shown in Figure 2. BNI intends to evaluate the overall document/procedure program and recommend changes that will better align the process with the contract and execution strategy.

BNI has and will develop numerous plans over the life cycle of the WTP project. Many of these plans are listed in the contract deliverable.

3 Project Baseline Description

The Project Baseline description is contained in the Project Baseline report.

4 References

WTP Project Documents

CE-24590-PCA00001, *Project Baseline*

DB-W375-EG00001, *Basis of Design (BOD)*

K70P565, *Design Criteria Database*

PL-24590-PCA00001, *Project Control Plan*

PL-375-PR00001, *Risk Management Plan*

PL-W375-PR00001, *Technical Risk Management Plan*

PL-W375-TE00007, Rev.0, *Research and Technology Plan*

QAM-24590-01-00001, *Quality Assurance Manual*

RPT-W375-PR00017, *WTP Risk Assessment*

Other References

Design and Construction of the Hanford Tank Waste Treatment and Immobilization Plant, Contract No. DE-AC27-01RV14136

Figure 1 Organizational Breakdown Structure

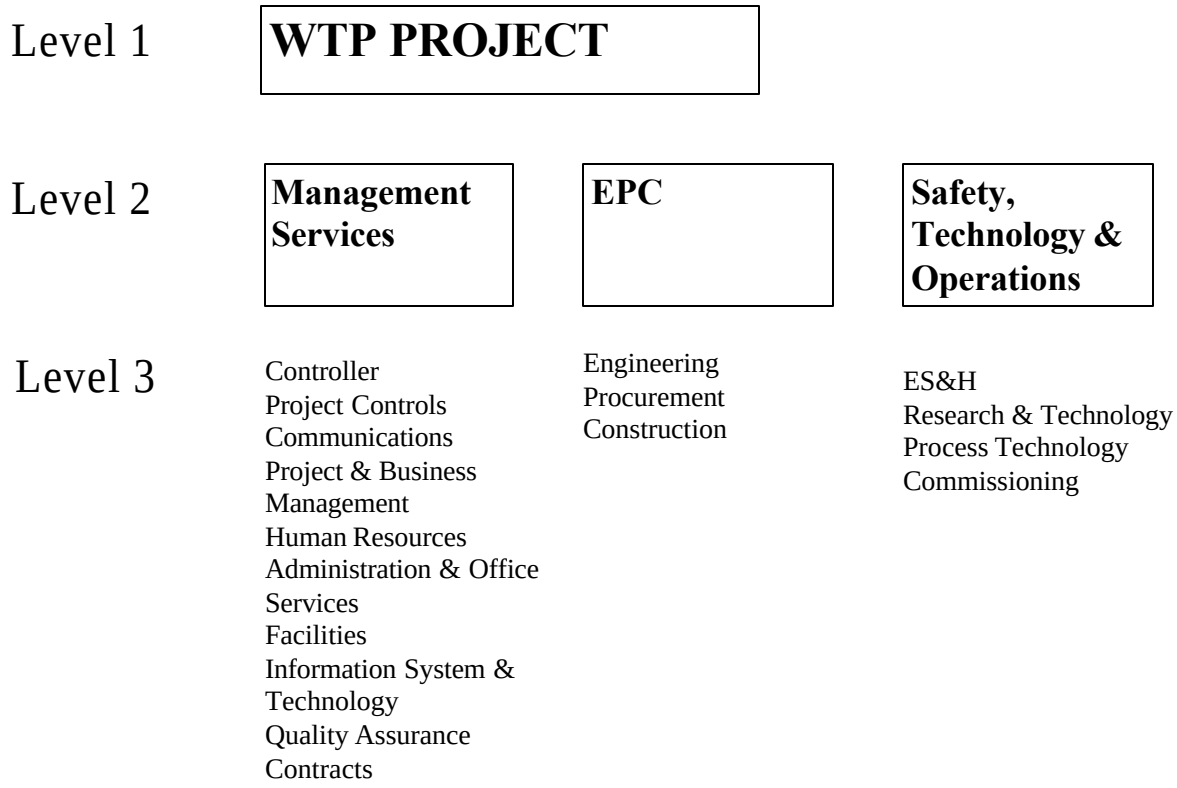
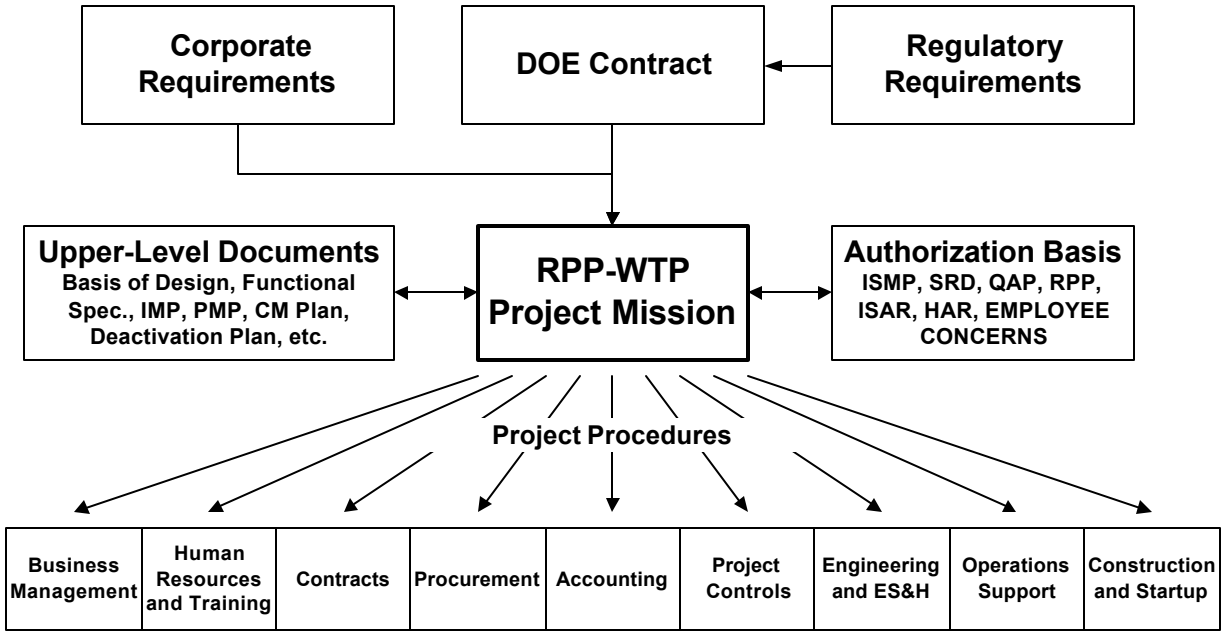


Figure 2 WTP Procedures



Appendix A

Project Organization, Functions, Responsibilities, and Authorities

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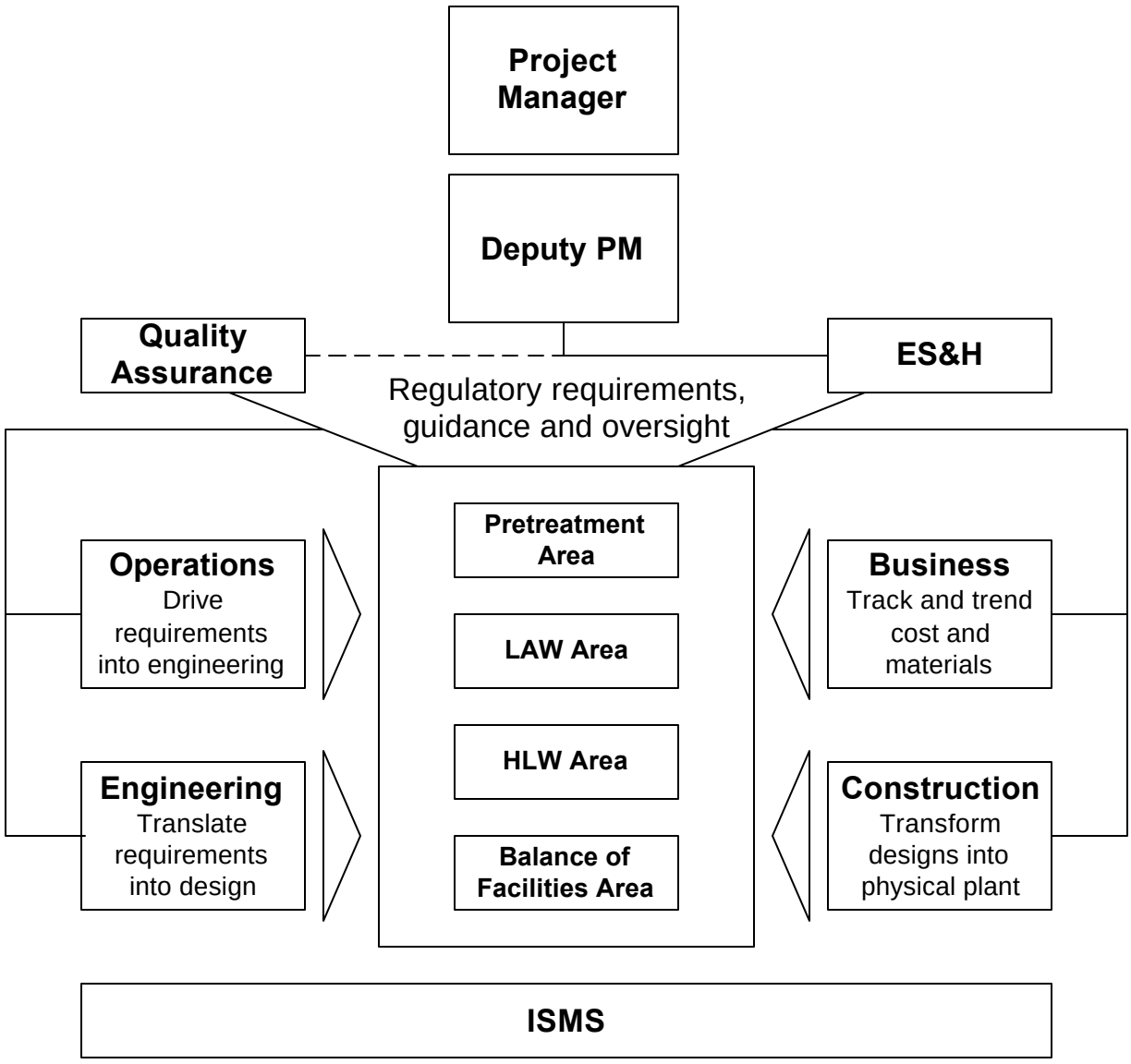

Project Manager

- Set overall policies, goals, and objectives based on DOE guidance
- Establish project management execution plan
- Promote safety, quality, cost, and schedule performance
- Champion ISMS

- Champion employee concerns program
- Interact with the community
- Establish formal partnering program
- Ensure clear communication throughout organization
- Full decision-making authority

Deputy Project Manager

- Lead design transition, design, construction, procurement activities
- Deliver a cost-effective, reliable, high-quality, safe, compliant design
- Implement project management execution plan
- Maintain project deliverables schedule
- Chair the Configuration Control Board
- Champion lessons learned/continuous improvement programs

Area Project Managers

- Serve as area-specific extension of project management
- Provide technical scope, cost and schedule (integrated baseline) accountability for area of responsibility
- Guide safety and quality of area work activities
- Manage interfaces among functional organizations
- Plan and prioritize area-specific work activities
- Manage area-specific subcontracts

Functional Departments

- Oversee day-to-day execution of work
- Integrate ISMS into work processes
- Establish procedures, processes, and tools
- Ensure functional integration consistency and standardization project-wide
- Perform self-assessments
- Manage resources
- Manage functional specific subcontractors
- Lead continuous process improvement

Environmental, Safety, and Health

- ES&H assessments
- Programmatic ISMS
- Industrial safety, radiological safety, and industrial hygiene
- Authorization Basis ownership

- Permitting and licensing

Quality Assurance

- Independent assessment
- Quality assurance program
- Price-Anderson Amendment Act (PAAA) compliance
- Compliance verification
- Supplier/subcontractor quality
- Deficiency trending